

Risk Assessment Review

Introduction

Mountainland Association of Governments (MAG) will be updating the current Utah MAG Natural Hazards Mitigation Plan for the Utah Division of Homeland Security and FEMA. The updated MAG Natural Hazard Mitigation Plan will comply with Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000), 44 CFR parts 201 and 206, Interim Final Rule.

The Pre-Disaster Mitigation (PDM) program provides funds to States, Territories, Federally-recognized Indian tribal governments, and communities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations.

Plan Revision Tasks

Risk Assessment

Review, discuss, document and update the regional risk assessment portion of the current MAG Natural Hazard Mitigation Plan using HAZUS, GIS, city and county parcel and county assessor data for the vulnerability assessment, include but not limited to:

1. Identifying hazards that impact planning area.
2. Profiling hazards that can impact the area to understand consequences.
3. Identifying infrastructure that is vulnerable to losses and or damage by the identified hazards.
4. Estimating the potential losses that can result from the occurrence of the identified hazards.

Development and Mitigation Efforts

1. Review, discuss, document and update statewide, regional, county, and city changes in development.
2. Review, discuss, document, and update statewide mitigation efforts and activities.
3. Review, discuss, document, and update public and local participation in identifying local mitigation priorities and mitigation strategies.

Adoption

A formal resolution, decree, declaration, or ordinance is required for all jurisdictions participating in the planning process.

Timeframe

March 18, 2015 – August 30, 2016

ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT	
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)?	
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction?	
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction?	
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods?	

ELEMENT C. MITIGATION STRATEGY	
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs?	
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate?	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?	
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure?	
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction?	
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate?	

Daniel

Daniel	Buildings At Risk	Monetary Loss	Acreage
100 Year Flood	12	\$2,335,718	55.32
500 Year Flood	19	\$3,092,928	59.41
Dam Failure	0	0	0
Fire-High to Moderate Risk	116	\$14,980,536	394.03
Debris Flow	7	\$1,952,439	16.74
Landslide-Moderate	1	\$493,016	4.93
Liquefaction	0	0	0

Wasatch County Critical Facilities

Facility Name	Address	City	Type
HEBER VALLEY ELEMENTARY	730 S 600 W	HEBER CITY	School
MIDWAY ELEMENTARY	225 S 100 E	MIDWAY	School
WASATCH HIGH SCHOOL	930 S 500 E	HEBER CITY	School
TIMPANOGOS INTERMEDIATE SCHOOL	200 E 800 S	HEBER CITY	School
J.R. SMITH ELEMENTARY	235 E 500 N	HEBER CITY	School
WASATCH LEARNING ACADEMY	101 E 200 N	HEBER CITY	School
OLD MILL ELEMENTARY	1600 E 980 S	HEBER CITY	School
ROCKY MOUNTAIN MIDDLE SCHOOL	800 W SCHOOL HOUSE WY	HEBER CITY	School
WASATCH HIGH SCHOOL NORTH CAMPUS	180 E 600 S	HEBER CITY	School
TIMBERLAKES FIRE STATION	2085 TIMBERLAKES DR	HEBER CITY	Fire
MIDWAY FIRE STATION	40 N 100 W	MIDWAY	Fire
WASATCH COUNTY FIRE DISTRICT	10420 N JORDANELLE BLVD	JORDANELLE	Fire
WALLSBURG FIRE STATION	70 W MAIN CANYON RD	WALLSBURG	Fire
HEBER EMS BUILDING	88 W 100 S	HEBER CITY	Fire
WASATCH COUNTY SHERIFF	1361 S HIGHWAY 40	HEBER CITY	Police
HEBER CITY POLICE DEPT	301 S MAIN ST	HEBER CITY	Police

Probability Calculations for Wasatch County

Hazard	Number of Events	Years in Record	Recurrence Interval (years)	Hazard Frequency and Probability/Year	Source
Avalanche	36	19	0.56	1.89	NOAA
Drought (Moderate, PDSI<-2)	23	120	5.20	0.19	Utah State Water Plan
Earthquakes 3.0 and greater	12	52	4.42	0.23	University of Utah Dept of Seismology
Floods	6	65	11	0.09	Various
Hail (> .74")	9	60	6.78	0.15	NOAA
Landslides (causing damage)	3	51	17.33	0.06	SHELDUS
Lightning (fatalities)	3	19	6.67	0.16	NOAA
Wildfires over 300 acres	9	54	6.11	0.17	Utah Division of Forestry Fire and State Lands and BLM
Wildfires over 50 acres	18	54	3.06	0.33	
Urban Interface Fires	Unknown	Unknown	Unknown		
Wind (with injuries or \$ damages)	16	60	3.81	0.27	NOAA (High Wind and Thunderstorm Wind)
Winter Weather (with injuries or \$ damages)	38	19	0.53	2.00	NOAA (Blizzards, Snow, Winter Weather, Cold, Wind Chill)
Tornadoes (all)	0	65	None	0.00	NOAA
Volcanoes	700	5,000,000	7142.86	Negligible	

Recurrence interval: (number of years in record +1)/number of events.

Frequency: Number of events/Number of years in record.

Fires				
		Fire Name	Start Date	Total Acres
	Cascade2		9/23/2003	7828
	Wasatch Mountain Fire		8/30/1990	3000
	South Hollow		8/17/2001	2121
	East Vivian		7/29/2000	1753
	Mill Hollow		6/23/2008	694
	Fox Bay		08/18/2012	535
	Daniels Canyon		8/13/1996	483
	Deer Creek		7/29/1960	415
	Vivian Park		8/11/1996	350
	Piuta		7/28/1980	325
	Totals:	Fires > 300 acres	10	17504
	Iron Mine Lake		7/19/2000	200
	Broadhead Meadows		5/14/1905	200
	Daniel's Creek		9/4/1964	195
	Wallsburg		10/16/1964	180
	Center Canyon		10/3/1993	160
	UTAH		7/24/1981	100
	Wallsburg		7/26/2000	99.82
	Deer Creek Dam		10/9/2000	90
	Bear Canyon		7/20/1961	80
	Totals:	Fires 50-299 acres	9	1304.82

Landslide/Debris Flow		
Location	Date	Damages
Wasatch	12/27/1964	\$500
Wasatch	1/1/1983	\$8,603,666
Wasatch	1/1/1984	\$1,471,256

Source: Spatial Hazard Event and Losses Database

Flooding	Location and Extent	Date	Fatalities	Damages	Cause/Details	Source
	Strawberry, upper Price, Weber, Provo and Jordan Rivers; Spanish Fork, upper Chalk Creeks	04/28/1952-06/11/1952	2	\$8.4 million	Melting of snowpack having maximum-of-record water content for Apr. 1. Disaster declared.	National Water Summary 1988-89-- Hydrologic Events and Floods and Droughts: U.S. Geological Survey Water-Supply Paper
	Northern Utah, Deer Creek Dam	01/29/1963-02/02/1963	0		Record-breaking precipitation	Richardson, Peck and Green, "Heavy Precipitation Storm In Northern Utah January 29 to February 2, 1963" U.S. Weather Bureau
	Lower Duchesne and Jordan Rivers and tributaries (including Spanish Fork); upper Price, Chalk, East Canyon, Trout	04/10/1983-06/25/1983	0	\$621 million	Rapid melting of snowpack having maximum-of-record water content for June 1. Disaster declared by President.	National Water Summary 1988-89-- Hydrologic Events and Floods and Droughts: U.S. Geological Survey Water-Supply Paper
	White, upper Price, and Fremont Rivers; Beaver River, Red Butte Creek; Spanish Fork; Jordan River	04/17/1984-06/20/1984	1	\$41 million	Runoff from greater than average snowpack for Apr. 1 and spring precipitation.	National Water Summary 1988-89-- Hydrologic Events and Floods and Droughts: U.S. Geological Survey Water-Supply Paper
	Wasatch County	2/12/1986	0.9	\$74,866	Heavy rains and snow (SHELDUS divides the damages and fatalities by the number of counties involved)	Spatial Hazard Event and Losses Database
	Wasatch County	08/01/2005		\$19934 82		FEMA Disaster Declaration 1598
	US Southwest, including Utah, Wasatch and Summit Counties	8/8/2011	1	\$11 million		"US Flood Loss Report-Water Year 2012" National Water Service. http://www.nws.noaa.gov

*FEMA has paid Heber, Midway, and Wasatch County a total of \$39,288.90 for 9 Flood Insurance claims since

Earthquakes			
Location	Magnitude	Date	
12 miles northeast of Strawberry Reservoir	3.9	8/17/1963	
Near Heber	3.8	10/1/1972	
Near Heber	3.2	10/2/1972	
Near Heber	3	12/24/1972	
Deer Creek Reservoir	3.4	8/5/1973	
South of Heber	3.4	8/19/1973	
W of Hanna, Wasatch County	3.2	4/9/1988	
SE of Wallsburg, Wasatch County	3.2	7/19/1999	
E of Heber, Wasatch County	3	12/10/2000	
Near Currant Creek Peak, Wasatch County	3	11/17/2003	
Near Strawberry Reservoir, Wasatch County	3.5	6/11/2006	
5km S of Francis, Wasatch County	3.2	3/14/2014	

Source: University of Utah and United States Geological Survey
earthquake.usgs.gov/earthquakes/search

Drought			
Location	Extent	Magnitude	Date
Summit/Wasatch County	Northern Mountains	Moderate	1898-1905
Summit/Wasatch County	Northern Mountains	Severe	1928-1936
Summit/Wasatch County	Northern Mountains	Mild	1946-1964
Summit/Wasatch County	Northern Mountains	Moderate	1976-1979
Summit/Wasatch County	Northern Mountains	Moderate	1987-1992
Summit/Wasatch County	Northern Mountains	Moderate	1999-2004
Summit/Wasatch County	Northern Mountains	Moderate	2012-Present

Source: Utah State Water Plan (2007) and Natural Resource Conservation Service

Severe Weather	Deaths			Injuries			Property Damage			Crop Damage		
	1950-1999	2000-2009	2010-2015	1950-1999	2000-2009	2010-2015	1950-1999	2000-2009	2010-2015	1950-1999	2000-2009	2010-2015
Avalanche	2	24	10	6	9	1	\$50,000	\$20,000	\$0	\$0	\$0	\$0
Winter Weather	10	1	0	50	4	0	\$604,500	\$368,250	\$50,000	\$8,600	\$10,000	\$0
Flood	0	0	-	0	0	-	\$2,000	\$50,000	-	\$0	\$0	-
Hail	0	0	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0
Wind	0	1	0	6	3	1	\$212,000	\$243,800	\$30,000	\$0	\$22,000	\$0
Lightning	-	1	-	-	0	-	-	\$15,000	-	-	\$0	-
Wildfire	-	3	1	-	0	6	-	\$0	\$0	\$10,710,000	-	\$0

Source: National Oceanic and Atmospheric Administration. See <http://www.ncdc.noaa.gov/stormevents> for more information